

CLAIMS:

1. An apparatus for adjusting the timing of contact between a transfer assist blade and a charged imaging surface in order that the timing be automatically adjusted within specifications, said apparatus comprising:

an imaging apparatus for developing a partially toned pattern having about 20 to about 80 percent coverage in a region of a charged imaging surface;

a transfer assist blade assembly, including a transfer assist blade, for moving a transfer assist blade between a position engaged with a surface and a position disengaged from such surface;

a drive device, connected to the transfer assist assembly, for imparting engagement and disengagement motion to the transfer assist blade, said drive device having an activation time for engaging the transfer assist blade with the surface and a deactivation time for disengaging the transfer assist blade from the surface;

a toner area coverage measuring device for measuring the percentage of the partially toned region that is covered by toner; and

a controller, in communication with the drive device and area coverage measuring device, for adjusting the timing of activation of the drive device, wherein, in response to receiving signals from the toner area coverage measuring device indicating that the time of activation resulted in engagement of

the transfer assist blade outside of the specifications, the controller adjusts the timing of activation accordingly.

2. The apparatus of **claim 1**, wherein the indication whether the time of activation results in engagement within or outside of specifications is determined based upon the portion of the partially toned region that is smeared by the transfer assist blade.

3. The apparatus of **claim 1**, wherein the toner area coverage measuring device emits a signal that varies voltage with the percentage of area coverage.

4. The apparatus of **claim 1**, wherein the imaging apparatus partially tones the region from about 40 to about 60 percent coverage.

5. The apparatus of **claim 1**, wherein the imaging apparatus partially tones the region about 50 percent.

6. The apparatus of **claim 1**, wherein the imaging apparatus partially tones the region in a halftone pattern.

7. The apparatus of **claim 1**, wherein the region is an interdocument zone.

8. The apparatus of **claim 1**, wherein the region encompasses a seam in the charged imaging surface.

9. The apparatus of **claim 1**, wherein the area coverage measuring device is a black toner area coverage sensor.

10. The apparatus of **claim 1**, wherein the controller, in response to receiving signals from the toner area coverage measuring device indicating that the timing of deactivation resulted in disengagement of the transfer assist blade outside of the specifications, adjusts the timing of deactivating the drive device in a manner that moves the transfer assist blade from an engaged position to a disengaged position at a time estimated to be within the specifications.

11. The apparatus of **claim 1**, wherein the controller commences the process of adjusting the timing of activating the drive device in response to detected events.

12. The apparatus of **claim 1**, wherein the controller commences the process of adjusting the timing of activation the drive device in response to counted events.

13. The apparatus of **claim 1**, wherein the toner area coverage sensor increases a voltage signal in response to detection of increased light reflection.

14. The apparatus of **claim 1**, further comprising a copy substrate leading edge detector wherein the timing of activation of the transfer assist blade is specified in order that engagement occur close to the leading edge of a copy substrate.

15. The apparatus of **claim 1**, further comprising a location indicator on the charged imaging surface and a sensor for detecting the location indicator wherein the timing of activation of the transfer assist blade is determined in relation to the time at which the location indicator is sensed.

16. An electrostatographic imaging system having specifications for engaging a transfer assist blade with a charged imaging surface, comprising:

a charged imaging surface;

an imaging apparatus for developing a partially toned pattern having about 20 to about 80 percent coverage in a region of a charged imaging surface;

a transfer assist blade assembly, including a transfer assist blade, for moving a transfer assist blade between a position engaged with a surface and a position disengaged from such surface;

a drive device, connected to the transfer assist assembly, for imparting engagement and disengagement motion to the transfer assist blade, said drive device having an activation time for engaging the transfer assist blade with the surface and a deactivation time for disengaging the transfer assist blade from the surface;

a toner area coverage measuring device for measuring the percentage of the partially toned region that is covered by toner; and

a controller, in communication with the drive device and area coverage measuring device, for adjusting the timing of activation of the drive device, wherein, in response to receiving signals from the toner area coverage measuring device indicating that the time of activation resulted in engagement of the transfer assist blade outside of the specifications, the controller adjusts the timing of activation accordingly.

17. A method for automatically adjusting the timing of engagement of a transfer assist blade with a charged imaging surface, comprising:

commencing a sequence for adjustment of the engagement timing;

developing a partially toned pattern having about 20 to about 80 percent coverage in a region of the charged imaging surface;

activating a drive device that moves a transfer assist blade from a disengaged position to an engaged position at a time estimated to engage the transfer assist blade within a specified portion of the partially toned region;

reading, by a controller, a signal from a toner area coverage sensor indicating the portion of the partially toned region that is smeared by the transfer assist blade;

determining, with a controller, from the signal from the toner area coverage sensor, whether the transfer assist blade engaged the charged imaging surface within specifications;

adjusting, in response to determining that the time of engagement was not within specifications, the time of activation of the drive device in order to meet specifications.

18. The method of **claim 17**, further comprising converting signals from the toner area coverage sensor into a form readable by the controller.

19. The method of **claim 17**, further comprising correlating the timing of detection of a copy substrate leading edge by a sensor with the timing of engagement by the transfer assist blade close to the leading edge of the copy substrate.

20. The method of **claim 17**, further comprising correlating the timing of detection of a location indicator on the charged imaging surface with the timing of engagement by the transfer assist blade close to the leading edge of the copy substrate.

21. The method of **claim 17**, wherein the step of developing comprises developing a partially toned pattern having about 40 to about 60 percent coverage.

22. The method of **claim 17**, wherein the step of developing comprises developing a partially toned pattern having about 50 percent coverage.

23. The method of **claim 17**, wherein the step of developing comprises developing a halftone pattern.

24. The method of **claim 17**, wherein the step of commencing is initiated by a counted event.

25. The method of **claim 17**, wherein the step of commencing is initiated by a detected event.

26. The method of **claim 17**, further comprising cleaning the transfer assist blade.

27. The method of **claim 17**, further comprising, after adjusting the time of activation, repeating the steps of developing, activating, reading and determining in order to verify that the time of engagement has been adjusted to within specifications.

28. The method of **claim 17**, further comprising determining the period of the toner area coverage sensor signal that corresponds with the width of the partially toned region.

29. The method of **claim 17**, further comprising:

deactivating the drive device in a manner that moves the transfer assist blade from an engaged position to a disengaged position at a time estimated to disengage the transfer assist blade within a specified portion of the partially toned region;

determining, with a controller, from the signal from the toner area coverage sensor, whether the transfer assist blade disengaged the charged imaging surface within specifications; and

adjusting, in response to determining that the time of disengagement was not within specifications, the time of deactivation of the drive device in order to meet specifications.

30. The method of **claim 17**, wherein the partially toned region is an interdocument zone.

31. The method of **claim 17**, wherein the partially toned region encompasses a seam in the charged imaging surface.

32. The method of **claim 17**, wherein the step of reading further comprises detecting an increase in the toner area coverage sensor in response to detection of increased light reflection.